



X-shaped Radical Offshore Wind Turbine for Overall Cost of Energy Reduction

D1.9

Environmental and H&S overview

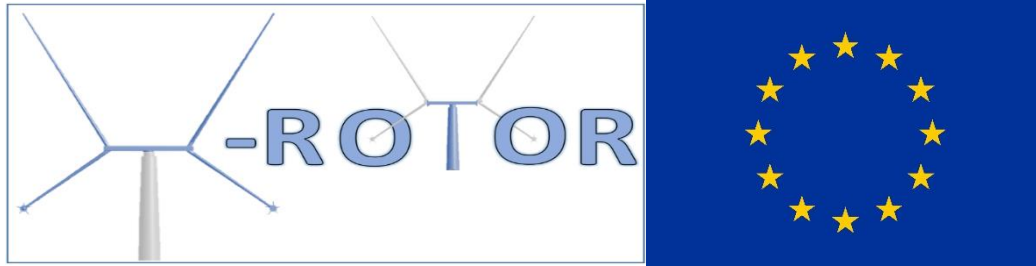
 <https://xrotor-project.eu>

 @XROTORProject

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X-SHAPED RADICAL OFFSHORE WIND TURBINE FOR OVERALL COST OF ENERGY REDUCTION

Project acronym: **XROTOR**

Grant agreement number: 101007135

WP1 Project Management D1.9 Environmental and H&S Overview

Lead Beneficiary: University of Strathclyde
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Document Information

Version	Date	Description	Prepared by	Reviewed by	Approved by
1	21/12/2021	Final version	James Carroll <i>James Carroll</i> (Project Manager)	W. Leithead	W. Leithead <i>W. Leithead</i> (Project Coordinator)



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CENER



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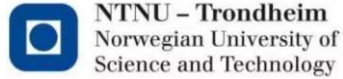


Executive Summary

Deliverable Description: This deliverable will comprise of a report on the possible harm to the environment caused by the research (if any) and the measures that will be taken to mitigate the risks. Report must also include appropriate health and safety procedures conforming to relevant local/national guidelines/legislation are followed for staff involved in this project. The deliverable will be considered successful once delivered to the project coordinator and/or the executive management group.

Responsible: University of Strathclyde

Outcome Summary: A partner specific report has been created on the possible harm to the environment caused by the research (if any) and the measures that will be taken to mitigate the risks. The report includes appropriate health and safety procedures for each partner conforming to relevant local/national guidelines/legislation are followed for staff involved in this project. This report has been presented to and signed off by the Project Coordinator. Based on the reasons outlined above, Deliverable 1.9 is successfully completed.



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1. Introduction

This partner specific report has been created on the possible harm to the environment caused by the XROTOR project research (if any) and the measures that will be taken to mitigate the risks. The report includes appropriate health and safety procedures for each partner conforming to relevant local/national guidelines/legislation are followed for staff involved in this project.

As the majority of the XROTOR project is desk based, most partners have little environmental impact and lower H&S concerns due to not having lab or field work. The report is split into sections for which each partner provided and approved the content for their section.

2. Strathclyde

The University of Strathclyde's contribution to the XROTOR project is desk based. Environmental concerns relate to office based staff, such as office energy contribution, paper consumption, recycling etc. To mitigate the energy consumption environmental impact of the University of Strathclyde have implemented an energy saving Combine Heat and Power District Energy Scheme as detailed here:

<https://www.strath.ac.uk/professionalservices/sustainablestrathclyde/chp/>.

As a means of mitigating, the environmental impact of paper and other consumables the University of Strathclyde follow a strict recycling programme as outlined here:

<https://www.strath.ac.uk/professionalservices/sustainablestrathclyde/recycling/>.

Staff at the University of Strathclyde are trained in Health, Safety and Wellbeing with access to resources here:

<https://www.strath.ac.uk/safetyhealthwellbeing/>.

Strict Covid 19 restrictions are also in place to ensure the Health and Safety of Staff, the regularly updated Covid19 guidance is included here:

<https://www.strath.ac.uk/coronavirus/>

3. GE

GE Renovables España's contribution to the XROTOR project is desk based. Environmental concerns relate to office based staff, such as office energy contribution, paper consumption, recycling etc. As a provider of many forms of renewable energy, the energy usage of GE Renovables España's office staff is a net positive in terms of energy usage and renewable energy generation. As a means of mitigating, the environmental impact of paper and other consumables GE Renovables España follow a strict recycling programme.

GE staff are trained in Health, Safety and Wellbeing with access to resources as outlined here:

https://www.ge.com/sites/default/files/GEA20002_Environment,Health,and_Safety_at_GE_2020.pdf

Strict Covid 19 restrictions are also in place to ensure the Health and Safety of Staff, with regularly updated Covid19 guidance that aligns with government advice.

4. CENER

1. An overview of the possible harm to the environment caused by your institution's XROTOR research (if any) and the measures that will be taken to mitigate the risks.

No harm to the environment is expected as a consequence of CENER's contribution to the X-Rotor project. The project only involves working in offices where we apply the principles:

- Reduce the consumption of paper and energy
- Recycle the paper, office materials and hardware whenever is possible, according to local and EU regulations
- The project does not generate any harm to the environment (such as emissions, dangerous waste, etc.)
- In addition, CENER contributes to generate Renewable Energy, as it owns a wind turbine that in balance generates more energy than the consumed by all our other facilities.

2. An overview of the health and safety procedures that your staff on the XROTOR project must follow? The H&S procedures should conform to relevant local/national guidelines/legislation and should also include covid considerations.

- All CENER's activities take into account the national regulations and also EU regulations on the matter, there are risk assessments to ensure all the hazards are taken into account and the proportional measures of application in each case are accomplished.
- COVID-19 procedures have been implemented since March 2020. Preventive and protective measures recommended both by the Health and Occupational Hazard Public Services are followed since then and currently no infections among the staff have been registered attributable to the work environment.

5. NTNU

Work at NTNU is based on a safe, secure and inclusive workplace, and this is regulated across the university, see <https://www.ntnu.edu/adm/hse> where the current guidelines and rules are collected.

The work performed in the XROTOR project will not make use of laboratory facilities, so no special considerations apply. There are regular fire drills (at least once per semester) and first aid courses are offered on a yearly basis.

Regarding the current Corona situation, NTNU takes a pro-active approach and provides support for working in the home office. Currently no physical meetings are allowed unless strictly necessary, and most employees work from home office, but the situation is fluid. NTNU has an actively maintained webpage that informs about the current situation, see <https://www.ntnu.edu/corona>, and which also provides guidelines about e.g. ergonomics, IT security, and other useful information.

It is not expected that work on the XROTOR project at NTNU has an adverse environmental impact of note.

6. TU Delft

TU Delft have a number of Health and Safety procedures and process in place that all XROTOR project must follow. For our lab based work training and online resources regarding H&S are also available to TUDelft based XROTOR employees through labervant (<https://labervant.tudelft.nl/>)

Within labervant TUDelft have the following trainings:

- General safety

- Lab safety
- Working with GMO's
- Working with cryogenic liquids
- Laser safety

Additionally TUDelft have Covid 19 H&S measures in place which are regularly updated here:
<https://www.tudelft.nl/en/2021/tu-delft/coronavirus>

It is not expected that work on the XROTOR project at TUDelft has an adverse environmental impact of note.

7. UCC

UCC is the XROTOR partner with the most project tasks outside of desk-based work. Consequently, compared to other partners, more details on UCC's health, safety and environmental considerations are included below:

1. Introduction

Safety, health and welfare at work is treated with the utmost importance at University College Cork. In accordance with national legislation (Safety, Health and Welfare at Work Act, 2005) it is the University's policy to ensure so far as is reasonably practicable the health and safety, while at work of all employees and to protect students and other persons entering the precincts of the University from injury and ill health arising from work conducted by employed persons on university property.

Overall responsibility for health and safety rests with the university president and university management team. In line with good practice and in keeping with legislative requirements, the university devolves responsibility to the most appropriate level. Within the university employee occupational Health and Safety is managed on a functional area/college & department basis, via the senior executive managers and heads of department, who manage and control operations.

2. Health and safety responsibilities – employees

Each employee is required, under the provisions of Section 13 of the Safety, Health and Welfare at Work Act 2005, to comply with specific statutory measures.

Employees of the University are required to¹:

- Report all accidents and dangerous occurrences.
- Take reasonable care for his/her own safety, health and welfare and that of any other person who may be affected by his/her acts or omissions, while at work.
- Co-operate with the University or any other person(s) to such an extent as will enable the University or any other person to comply with their statutory duties.
- Use in such a manner, so as to provide the protection intended, any suitable appliance, protective clothing, convenience equipment or other means or thing provided (whether for his/her use alone or for use by him/her in common with others) for securing his/her safety, health and welfare at work.
- Report to his/her immediate supervisor, without unreasonable delay any defects in plant, equipment, place of work or system of work which might endanger safety, health or welfare of which he/she becomes aware.
- Not intentionally misuse or interfere with any appliance, personal protective equipment or any other means provided for securing safety.

¹ Based on the Environmental Research Institute, University College Cork Safety Statement

- Carry out risk assessments on their research activities as required by ERI Management and supply copies of same to ERI Management.

Each employee is also required, under the Safety, Health and Welfare at Work (General Applications) Regulations, to take account of all training and instructions given by the University to:

- a) make correct use of machinery, apparatus, tools, dangerous substances, transport equipment and other means of production, and
- b) in cases where an employee is provided with personal protective equipment to:
 - make full and proper use of such equipment in accordance with the instructions provided and any training provided
 - take all reasonable steps to ensure that such equipment is returned to storage after use in good condition.

3. Health and safety responsibilities – Principal Investigators

In addition to the statutory safety responsibilities of all employees (as outlined in the previous section) principal investigators are responsible for²:

- Discharging any safety functions delegated to them by the ERI Director / MaREI Director, in relation to the areas / activities under their control.
- Ensuring that all work under their control is undertaken safely and without risk to health and complies with the provision of all relevant statutory legislation (this includes responsibility for the identification of hazards, undertaking risk assessments, implementing risk minimisation measures and reviewing the appropriate sections of the ERI safety statement which relates to the activities under their control).
- Acquiring an understanding of Health & Safety legislation specifically, the Safety, Health & Welfare at Work Act and associated Regulations (as amended), and relevant sections of Health & Welfare at Work (Construction) Regulations.
- Acquiring an understanding of H&S guidance documents, specifically: Code of Practice for the Chemical Agents Regulation 2016; Code of Practice for Biological Agents 2013
- Ensuring that the appropriate risk assessments for the work carried out under their areas of responsibility (labs, offices, workshops, and field work) are carried out.
- Ensuring that a SDS is available for each, and every chemical being used in the lab.
- Ensuring that the appropriate chemical risk assessments are carried out particularly for hazardous chemicals being stored or used under the areas of control.
- Ensuring compliance with SDS & Risk assessments in all respects.
- Review and question, if necessary, the risk assessments prepared in this document, which are applicable to their areas.
- Ensuring all staff employed by their office are briefed on the contents of this safety statement.
- Ensure all staff employed by their office are trained for the safe execution of their works e.g., manual handling, VDU training, chemical awareness, fire awareness, etc.
- Assisting in any incident / accident investigation where staff are involved.
- Ensure that all accidents/incidents associated with staff are reported.
- Ensuring that all construction work completed in the facility is completed under the management of the Building & Estates Office.
- Reviewing permit prepared by the Buildings & Estates Office to confirm items such as escape routes, access routes and any work areas which are in common occupation are maintained in a tidy condition at all times and that contractors make provision for fire prevention and usability of fire doors, escape routes, fire detection and alarm system, emergency lighting systems and firefighting equipment during said work (to include making provision for impaired persons to access \ egress buildings safely).

² Based on the Environmental Research Institute, University College Cork Safety Statement

- Setting a personal example in the lab to ensure a safe workplace is maintained i.e. addressing H&S issues as first item at meetings, wearing of lab coats, housekeeping, management of glassware, correct use of fume cupboards, no overloading of storage area, maintenance of signage, personal protective equipment compliance etc.
- Ensuring that all staff driving UCC transport have a clean driver's licence and are insured to drive the vehicle. A copy of individual driving licences are to be held on site.
- Conducting regular inspection of the workplace to ensure compliance.
- Ensuring all postgrads complete an individual risk assessment for their research work before commencing work in the lab.
- Ensuring all relevant staff participate in chemical or biological awareness training.
- Ensuring all staff employed by their office are briefed on the contents of this safety statement.
- Periodically appraising the effectiveness of the Safety Statement as it pertains to their place of work and staff.

4. **COVID-19 related procedures – employees**

- At least three days in advance of returning to work following a 'lock-down', employees are to complete a 'Pre-Return to Work form'. This form seeks confirmation that the worker, to the best of their knowledge, has no symptoms of COVID-19 and also confirm that the worker is not self-isolating or awaiting the results of a COVID-19 test.
- Employees should follow the guidance from the Health Service Executive, Health & Safety Authority, Work Safety Protocol³, and any campus wide or local measures applicable from time to time.
- Access to any building is only through the entrance signposted and /or specified in the building plan. Exit from any building is only through the exit signposted and /or specified in the building plan.
- Where possible ensure good ventilation in all areas including toilet areas.
- Employees should practice good hygiene at all times.
- Employees should not attend the University if displaying any symptoms of COVID-19, however if a person displays symptoms or believes they may have COVID-19 whilst at the University they should follow the steps in their unit's operational/response plan.
- Employees must keep records of all instances where they have been in close contact with other individuals
- Employees must keep records of face-to-face meetings and attendees
- *General*
- *Contact Logs*
- *Social (Physical) Distancing Requirements*
- Avoid physical contact including hand-shaking.
- Observe social distancing guidance where possible. In circumstances where this cannot be achieved, appropriate precautions such as face coverings will be required.
- Observe and follow all directional and other guidance signage within the building(s).
- Follow any one-way system or marked lanes in place to separate the flow of people.
- Adhere to room/lab occupancy limits as displayed outside each room/lab.
- When entering/exiting any doors, please look left and right and proceed if clear.
- Do not congregate near entrances and exits.
- Allow appropriate space from lift discharge points and stair access points.
- Minimise use of lifts or use them for the movement of heavy goods and impaired persons if possible. Lifts should be only used by one person at a time.
- When using a lift or stairs, please ensure that the lift is free or the stairwell is clear. Adhere to related signage instructions where one-way systems apply.
- If you see someone approaching any door, please stand back until they are clear.
- Where possible, walk on the left-hand side of the corridor and/or stairs.

³ COVID-19 National Protocol for Employers and Workers, issued by the Irish government

- Meetings and communications, where possible, should be conducted virtually using mobile technology.
- If face to face communication is necessary, then it should take place, for as short a time as possible, in a large space where physical distancing can be maintained and with adequate ventilation such as open windows.
- Any meetings over 2 hours duration must be risk assessed and the appropriate controls put in place. and with any specific direction from the employer.

5. **Environmental Impact**

There are no major environmental impact arising from the work undertaken by UCC within the X-ROTOR project.

Field work is undertaken to understand sea birds involved the handling and equipping/ringing of the birds. Such activities may have negative effects on the birds handled, the fieldwork protocols were prepared after having reviewed potential effects and are validated by the British Trust for Ornithology and Irish National Parks and Wildlife Service. Impacts were limited by reducing the duration of the handling to a minimum and in all cases, less than 10 minutes.

The only other (potentially) meaningful impacts are the climate impact associated with the air travel of the researchers. Wherever possible air travel is avoided – through use of virtual meetings (more common in a Covid-19 context) and/or the adoption of slow modes of travel. Where air travel is necessary, its impact is mitigated by making it more effective and efficient (via less frequent, but more intensive and perhaps multi-purpose trips) through and scheduling and planning.

8. Conclusion

To determine if this deliverable has been successfully completed, the deliverable description must be examined.

The deliverable description states: “This deliverable will comprise of a report on the possible harm to the environment caused by the research (if any) and the measures that will be taken to mitigate the risks. Report must also include appropriate health and safety procedures conforming to relevant local/national guidelines/legislation are followed for staff involved in this project. The deliverable will be considered successful once delivered to the project coordinator and/or the executive management group.”

Dissecting that description, A partner specific report has been created on the possible harm to the environment caused by the research (if any) and the measures that will be taken to mitigate the risks. The report includes appropriate health and safety procedures for each partner conforming to relevant local/national guidelines/legislation are followed for staff involved in this project.

This report has been presented to and signed off by the Project Coordinator.

In conclusion, deliverable 1.9 has been successfully completed.